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The effect of extracellular metabolites on the frequency of Thy+ revertants in Salmonella typhimurium populations

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Abstract

There is convincing evidence that adaptation and survival processes in bacterial populations depend on cell-to-cell interactions. Our studies showed that the frequency of stress-induced His+ reversions in an amino-acid- starved Salmonella typhimurium culture is inversely proportional to cell density in this culture. The effects of cell density and of different culture liquids prepared from cultures starved for histidine on the frequency of Thy+ revertants were also studied. It was found that the frequency of Thy+ revenants is inversely proportional (r = -0.74) to the density of the bacterial culture starved of thymine. The culture liquid prepared from the culture starved of histidine exerted an inhibitory effect on the frequency of Thy+ reversions, indicating that mutations induced by different types of stress have a common mechanism. The study of the effect of the culture liquid prepared from a histidine-starved culture on the frequency of ethyl- methanesulfonate-induced His+ revenants showed that this liquid prevented the induction of His+ reversions. © Pleiades Publishing, Inc., 2006.

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Keywords

Adaptive mutagenesis, Autoregulators, Quorum sensing, Salmonella typhimurium, Stress